

For the reasons stated, the decision of the Commissioner of Patents in appeal No. 6113, 98 USPQ 74, is affirmed.

[8] The respective parties rest their position in these three cases upon the unqualified basis that their business is located and operated in the State of Minnesota and that their goods are either grown, mined, manufactured, processed, sold, or distributed there. The term "Minnesota" as thus used by them from the outset is therefore primarily geographic under the provisions of section 2(e) of the Act of 1946.

From the foregoing it will be seen that, as the result of the dismissal of Minnesota Mining's opposition in appeal No. 6112, the mark owned by Minnesota Paint and involved in that proceeding stands eligible for registration on the principal register.

[9] Public policy is involved here and under the law and in the public interest it was not only the right but also the duty of the commissioner to determine, *ex parte*, and irrespective of the contentions of the parties, whether the primary geographical term "Minnesota" is entitled to registration on the principal register under the provisions of law. Burmel Handkerchief Corp. v. Cluett, Peabody & Co., Inc., 29 C.C.P.A. (Patents) 1024, 127 F.2d 318, 53 USPQ 369; C.B.S. Inc. v. Technicolor Motion Picture Corp. et al., 35 C.C.P.A. (Patents) 1019, 166 F.2d 941, 77 USPQ 160; Tidy-House Paper Products, Inc. v. Tidy House Products Co., 38 C.C.P.A. (Patents) 1099, 189 F.2d 280, 89 USPQ 599; Strey v. Devine's, Inc., 103 USPQ 289; The Coshocottontown Glove Co. v. Buckeye Glove Co., 24 C.C.P.A. (Patents) 1338, 90 F.2d 660, 34 USPQ 64.

[10] Upon careful consideration of these cases we are of the opinion that, in view of the obviously geographical nature of the word "Minnesota" and the fact that it has been widely applied to various goods by both of the parties involved in these proceedings, a mere affidavit by an applicant for registration asserting a conclusion as to exclusive use of the word as a trademark is not a sufficient compliance with the provision of section 2(f) of the Trademark Act of 1946, which states that the commissioner may accept, as *prima facie* evidence of distinctiveness, *proof* of substantially exclusive and continuous use of the mark involved for the five years next preceding the date of the filing of the application.

The registration of the word "Minnesota" on the principal register on the basis of the application involved in appeal No. 6112, therefore, would not be proper on the basis of the present record, and the decision in that appeal is

accordingly reversed and the case is remanded for further consideration of the question of registrability in accordance with the views above set forth.

The decisions of the commissioner in appeal Nos. 6111 and 6113 are affirmed.

JOHNSON, Judge, concurs in the conclusion as to appeal Nos. 6111 and 6113 and dissents as to appeal No. 6112.

GARRETT, Chief Judge, participated in the hearing and original opinion (which was recalled) in this case, but resigned on September 15, 1955, and, therefore, did not participate in the instant opinion.

43 C.C.P.A. (Patents) 775

#### Court of Customs and Patent Appeals

In re CHILOWSKY

Appl. No. 6122 Decided Jan. 20, 1956

#### PATENTS

##### 1. Specification—Sufficiency of disclosure (§ 62.7)

Disclosure of application embraces not only what is expressly set forth in words or drawings, but what would be understood by persons skilled in art.

##### 2. Specification—Sufficiency of disclosure (§ 62.7)

That many procedures and materials suggested by application are identified in general terms, and that exact proportions and amounts are left for determination by those skilled in art, is not fatal defect if it appears that those skilled in art possess necessary knowledge to make required determination.

##### 3. Operability (§ 48.)

Mere fact that something has not previously been done is not, in itself, sufficient basis for rejecting all applications purporting to disclose how to do it.

##### 4. Operability (§ 48.)

##### Specification—Sufficiency of disclosure (§ 62.7)

Same principles apply in determining operativeness and sufficiency of disclosure in applications relating to nuclear fission as in other cases; there is no basis in statutes or decisions for requiring any more conclusive evidence of operativeness in one type of case than another; character and amount of evidence needed may vary, depending on whether alleged operation described in application ap-

pears to accord with or to contravene established scientific principles or to depend upon principles alleged but not generally recognized, but degree of certainty as to ultimate fact of operativeness or inoperativeness should be same in all cases.

### 5. Operability (§ 48.)

In usual case where mode of operation alleged can be readily understood and conforms to known laws of physics and chemistry, operativeness is not questioned, and no further evidence is required; if alleged operation seems clearly to conflict with recognized scientific principle, presumption of inoperativeness is so strong that very clear evidence is required to overcome it; if device is of such nature that it cannot be tested by known scientific principles, it is incumbent on applicant to demonstrate its workability and utility and make clear the principles on which it operates.

### 6. Operability (§ 48.)

Pleading and practice in Patent Office  
—Rejections (§ 54.7)  
Specification—Sufficiency of disclosure  
(§ 62.7)

Since it should be possible to test application disclosure by known scientific laws governing atomic fission, broad allegation that disclosure is speculative, coupled with recitation of difficulties which might be encountered in attempting to put it into practice, and further assertion that there might be other unforeseen difficulties, is not sufficiently definite statement of basis for rejection.

### 7. Operability (§ 48.)

Pleading and practice in Patent Office  
—Rejections (§ 54.7)  
Specification—Sufficiency of disclosure  
(§ 62.7)

That disclosure, or parts of it, may be in broad terms is not, in itself, sufficient to justify holding of inoperativeness; specific values and proportions need be given only to the extent that they are necessary to desired operation; in absence of indication that certain proportions are critical, rejection cannot be based on fact that proportions are broadly stated in application.

### 8. Pleading and practice in Patent Office —Evidence (§ 54.5)

Specification—Sufficiency of disclosure  
(§ 62.7)

Where examiner considers that art does not possess knowledge required to select proportions and quantities required for operation of applicant's method, he should make that fact definitely known to applicant at such a stage that latter

may present evidence to show that such knowledge was available.

### 9. Operability (§ 48.)

Pleading and practice in Patent Office

—Rejections (§ 54.7)

Specification—Sufficiency of disclosure  
(§ 62.7)

Disclosure is not speculative as to proportions of materials given in examples and its operativeness can be determined, at least theoretically; proper examination of application requires examiner to make such determination or call upon applicant to explain how proportions should be expected to produce desired operation.

### 10. Pleading and practice in Patent Office

—Rejections (§ 54.7)

Specification—Sufficiency of disclosure  
(§ 62.7)

Neither failure of application to set forth certain theoretical factors, nor allegation that disclosure is based on speculation, affords proper basis for rejection; application must be judged by what it discloses rather than by supposed mental state of applicant when application was prepared; if disclosure is sufficient to enable skilled worker in art to practice invention, it is immaterial whether applicant understood or explained all principles underlying it.

### 11. Operability (§ 48.)

Patentability—Utility (§ 51.75)

Failure of other devices designed for same general purpose does not prove that applicant's device could not operate successfully; moreover, it is not necessary that invention be commercially successful in order to support patent.

### 12. Pleading and practice in Patent Office

—In general (§ 54.1)

Pleading and practice in Patent Office  
—Rejections (§ 54.7)

Where applicable statutes and regulations permit prosecution of applications involving nuclear fission, they should be examined, so far as possible, in same way and judged by same standards as other applications; applicants for patents in this field, as in all others, are entitled to specific information as to grounds on which applications are rejected and should not be met with blanket rejection based on comparatively recent development of art and difficulty experienced in producing commercial devices.

### 13. Court of Customs and Patent Appeals

—Dismissing and remanding  
(§ 28.15)

Rejection is reversed and case is remanded where Patent Office tribunals did not sufficiently explain reasons for re-

jection of claims to permit proper determination of issue by court.

**Particular patents—Atomic Energy**

Chilowsky, Method and Apparatus for Extraction and Utilization of the Thermal Energy Resulting from Atomic Decomposition of Uranium and its Compounds, all claims of application not refused.

Appeal from Board of Appeals of the Patent Office.

Application for patent of Constantin Chilowsky, Serial No. 568,986, filed Dec. 20, 1944; Patent Office Division 70. From decision rejecting all claims, applicant appeals. Reversed and remanded.

W. SAXTON SEWARD, New York, N.Y. (ASHER BLUM, New York, N.Y., and ROBERT I. DENNISON, Washington, D.C., of counsel) for appellant.

CLARENCE W. MOORE (S. W. COCHRAN of counsel) for Commissioner of Patents.

Before O'CONNELL, Acting Chief Judge, and JOHNSON, WORLEY, COLE and JACKSON (retired), Associate Judges [original argument before GARRETT, Chief Judge, and O'CONNELL, JOHNSON, WORLEY and COLE, Associate Judges].

WORLEY, Judge.

This appeal is from the decision of the Board of Appeals of the United States Patent Office, affirming the final rejection by the Primary Examiner of all the claims of appellant's application, No. 568,986, filed December 20, 1944, for a patent on a method and apparatus for extraction and utilization of the thermal energy resulting from atomic decomposition of uranium and its compounds. It is the first case to come before us involving the utilization of nuclear fission for the production of useful energy. Argument thereon was first heard March 8, 1955, but in view of the complex nature of the subject matter and the importance of the issues involved, we requested reargument and the filing of additional briefs by the respective parties. Thereafter, on November 7, 1955, reargument was had.

No generic claim has been allowed. Claims 9, 31, and 34 were rejected as not reading on the elected species, while the remaining claims were rejected as based on insufficient and indefinite disclosure as well as being drawn to a method and apparatus inoperable to attain the stated results. Under those circumstances, all the claims must stand or fall together. They have not been treated individually below and need not be so treated here. Claim 1, which is typical of the appealed claims, is as follows:

1. The method of extraction and transportation of the thermic energy resulting from atomic decomposition of uranium or the like which includes, providing a metallic liquid having a low absorption for slow neutrons, distributing in said liquid in the form of a finely-divided suspension a quantity of fissionable material and a light element in suitable proportions and sufficient in mass and concentration to ensure atomic decomposition in branched chains of the fissionable material suspension, whereby a body having liquid mobility is formed, causing atomic decomposition to take place with the generation of heat in said body, transporting at least a part of said heated body to a heat exchanger in which said body is cooled and atomic decomposition does not take place, and returning said body to a condition suitable for repeated atomic decomposition.

The references relied on are:

Chem. Eng. News, page 777, March 17, 1947, Vol. 1.

Goodman, "The Science and Engineering of Nuclear Power," pages 275, 303-308, Addison-Wesley Press (1947).

Smyth Report, Atomic Energy for Military Purposes, pages 21-25, August 1945.

The application relates to the production of power by the atomic decomposition of uranium and its compounds. Basically, the process disclosed involves the use of a so-called "special liquid" which comprises a suspension of fine particles of uranium or its compounds, with light elements insuring the formation of slow neutrons, in a molten metal or alloy having little capacity for absorbing neutrons. Various combinations and proportions of those ingredients are suggested, with two specific examples given, including specified percentages of uranium or uranium carbide, and molybdenum di-carbide in a supporting liquid which may be lead, radio-lead, bismuth or an alloy of lead and bismuth. The size of the suspended particles may vary from approximately .01 mm. to .001 mm., or even less.

A quantity of the special liquid, which may contain approximately fifteen tons of uranium, is placed in a decomposition chamber of suitable size, having steel walls of a thickness in the neighborhood of 50 cm. In this chamber atomic decomposition is said to take place, resulting in a temperature which may range up to 1700°—2000° C. Control of the maximum temperature is to be effected by the use of proper quantities of cadmium, which has the property of absorbing slow

neutrons, thus retarding the atomic decomposition. Cadmium may be included in a "small and precisely measured quantity" in a metallic cooling fluid which is contained in a coil or it may be present in the special liquid itself surrounding the decomposition chamber. It is stated in the application that the amount of cadmium must be such that, when the temperature reaches the desired upper limit, enough neutrons will be absorbed to stop the atomic decomposition. No specific amount of cadmium is given.

It is stated in the application that when atomic decomposition of the special liquid takes place it is accompanied by a boiling and foaming which causes the liquid to be vaporized and projected upwardly and out of the decomposition chamber, where it enters the tubes of a heat exchange device, such tubes being surrounded by a fluid medium such as water which circulates around them and is converted into superheated steam which is removed and employed for a useful purpose such as the driving of an engine. The expansion and vaporization of the special liquid as it leaves the decomposition chamber reduces the concentration of the uranium which it contains below the critical point, thus stopping the atomic decomposition, whereupon the vaporized liquid condenses and returns to the decomposition chamber, where it is again vaporized, due to increased concentration, and the process above described is repeated indefinitely.

The application discloses various methods and devices for extracting heat from the special liquid and applying it to useful purposes, after the desired atomic decomposition has begun. Those methods and devices are not specifically discussed in the rejection and it does not appear that any serious question is raised as to their operativeness, if the controlled atomic decomposition described can be effected in the decomposition chamber. Accordingly, no further discussion of the heat extracting and applying means is considered necessary.

The rejections on the grounds of indefiniteness and inoperativeness have been treated together by the Patent Office tribunals and raise, in effect, a single issue, namely, whether the disclosure of the applicant's application is sufficient to enable a person skilled in the art to which it relates to construct a device which can operate in the manner described. (35 U.S.C. 112)

[1] It is well settled that the disclosure of an application embraces not only what is expressly set forth in words or drawings, but what would be understood by persons skilled in the

art. As was said in *Webster Loom Co. v. Higgins et al.*, 105 U.S. 580, 586, the applicant "may begin at the point where his invention begins, and describe what he has made that is new and what it replaces of the old. That which is common and well known is as if it were written out in the patent and delineated in the drawings." One of the issues in the present case relates to the scope and nature of the matters which may be sufficiently common and well known as to permit them to form an unwritten part of the disclosure of the application.

The Primary Examiner took the position that "Before a patent may issue to a process or apparatus for generating power by nuclear fission, there must be conclusive proof that the reactor disclosed therefore [sic] can be constructed and operated by following the present disclosure, or that the reactor was constructed and did operate. \* \* \* Also, it must appear from applicant's disclosure, not that an operative reactor can probably be built, but that an operative reaction [sic] can actually be built." No authority was cited in support of those statements, which seem to be tantamount to an assertion that a nuclear reactor must be actually built and operated before a patent may be obtained, since it is not apparent how conclusive proof of operativeness could be furnished in any other manner.

The examiner criticized the disclosure of appellant's application on the grounds that it did not give the specific amounts of ingredients to be used, did not specify how highly they should be purified, and failed to set forth certain theoretical factors which, in his opinion, should have been taken into consideration. He concluded that the application "sets forth statements constituting generalities only and merely extends an invitation to subsequent workers in the art to carry on further experiments to achieve an operative system," and that the application therefore did not sufficiently disclose an operative apparatus or process.

The Board of Appeals took a position generally similar to that of the examiner, and stated that "The present specification is obviously speculative, suggesting a series of proposals which might possibly be used for the stated purpose. \* \* \* It will be apparent from what is said by Smythe [sic] and also by Goodman, that the basic laws governing atomic fission are known. With these laws in mind, and familiar laws of thermodynamics and physics, it is easy to postulate all of the possible general methods of utilizing atomic fission for the production of thermal

energy." The sentence last quoted seems to suggest that appellant's disclosure may be lacking in invention, but no rejection on that ground was made or recommended by the examiner or the board.

Neither the examiner nor the board pointed out any specific feature of appellant's disclosure which was definitely shown to be, or even considered to be, inoperative. The basis of the rejection seems rather to be that the apparatus may not operate, because of various difficulties which may arise when it is constructed. In fact, the board stated that "It is of course impossible to point out all the difficulties of a frankly speculative description of the present character until, or unless, an actual attempt is made to construct and operate apparatus of the character here suggested."

[2] It is true that many of the procedures and materials suggested by appellant's application are identified in general terms, and that exact proportions and amounts are left for determination by those skilled in the art. This would not be a fatal defect if it appeared that those skilled in the art possessed the necessary knowledge to make the required determination. On that point, very little actual information has been provided either by the appellant or the Patent Office tribunals; the appellant merely asserting that certain knowledge was available in the art, without pointing out where it could be found, while the examiner and the board relied upon general statements that commercial reactors had not been built at the time appellant's application was filed. The mere fact that something has not

[3] previously been done clearly is not, in itself, a sufficient basis for rejecting all applications purporting to disclose how to do it.

[4] In our opinion the same principles should apply in determining operativeness and sufficiency of disclosures in applications relating to nuclear fission as in other cases. There appears to be no basis in the statutes or decisions for requiring any more conclusive evidence of operativeness in one type of case than another. The character and amount of evidence needed may vary, depending on whether the alleged operation described in the application appears to accord with or to contravene established scientific principles or to depend upon principles alleged but not generally recognized; but the degree of certainty as to the ultimate fact of operativeness or inoperativeness should be the same in all cases.

[5] Thus, in the usual case where the mode of operation alleged can be readily understood and conforms to the

known laws of physics and chemistry, operativeness is not questioned, and no further evidence is required. On the other hand, if the alleged operation seems clearly to conflict with a recognized scientific principle as, for example, where an applicant purports to have discovered a machine producing perpetual motion, the presumption of inoperativeness is so strong that very clear evidence is required to overcome it. A third type of case was involved in *In re Harry E. Perrigo*, 18 C.C.P.A. (Patents) 1323, 48 F.2d 965, 9 USPQ 152, wherein the device involved was of such a nature that it could not be tested by any known scientific principles. In such a case, as we there held, it is incumbent on the applicant to demonstrate the workability and utility of the device and make clear the principles on which it operates.

[6] The present case does not appear to be of either of the two types last mentioned. On the contrary, it was stated by the board that "the basic laws governing atomic fission are known," and it should, therefore, be possible to test the application disclosure by those laws. Under such circumstances, we do not consider that a broad allegation that the application disclosure is speculative, coupled with a recitation of various difficulties which might be encountered in attempting to put it into practice, and a further assertion that there might be still other difficulties which could not be foreseen, constitutes a sufficiently definite statement of a basis for rejection.

[7] The fact that a disclosure, or parts of it, may be made in broad terms is not, in itself, sufficient to justify a holding of inoperativeness. Specific values and proportions need be given only to the extent that they are necessary to the desired operation. Accordingly, in the absence of any indication that certain proportions are critical, a rejection cannot properly be based on the fact that the proportions are broadly stated in an application.

[8] It is true that in a number of cases the appellant's application is based on the supposed ability of workers in the art to select or determine certain proportions and quantities, as, for example, when reference is made to the use of small and precise quantities of cadmium or other slow-neutron absorbing materials and to "sufficient liquid mobility" of the special liquid. It would be difficult or impossible, in many cases, for an examiner to present actual evidence to show that those skilled in the art did not know how to do a particular thing, but we are of the opinion that where the examiner considers that the art does not possess the required knowl-

edge he should make that fact definitely known to the applicant at such a stage that the latter may, if he can, present evidence to show that such knowledge was available.

[ ] What has been said above with respect to the more general portions of the disclosure of appellant's application applies with even greater force to the specific examples given therein. If the laws governing atomic fission are known, as stated by the board, it would seem that it should have been possible to determine whether or not the proportions of materials given in those examples were capable of producing a sustained chain reaction. As to such examples the disclosure is not speculative and its operativeness or inoperativeness can be determined, at least theoretically. We think that a proper examination of the application required that the examiner make such a determination or, at least call upon the applicant to explain how the proportions should be expected to produce the desired operation.

[10] We do not think that the failure of the application to set forth certain theoretical factors, nor the allegation that the disclosure is based on speculation, affords a proper basis for rejection. The application must be judged by what it discloses rather than by the supposed mental state of the applicant when his application was prepared. If the disclosure is sufficient to enable the ordinary skilled worker in the art to practice the invention, it is immaterial whether the applicant understood or explained all the principles underlying it.

[11] Neither is the fact that no commercially useful chain reactor had been produced when appellant's application was filed, a sufficient basis for rejection. The failure of other devices designed for the same general purpose does not prove that appellant's device could not operate successfully. Moreover, it is not necessary that an invention be commercially successful in order to support a patent.

[12] We appreciate the fact that the prosecution and examination of applications involving nuclear fission present numerous difficulties both to the applicants and to the Patent Office, because of the new basic principles involved and the various secrecy regulations. However, where the applicable statutes and regulations permit the prosecution of applications on such subject matter, they should be examined, so far as possible, in the same way and judged by the same standards as other applications. Applicants for patents in this field, as in all others, are entitled to specific information as to the grounds on which their applications are rejected

and should not be met with anything in the nature of a blanket rejection based on the comparatively recent development of the art and the difficulty which has been experienced in producing commercial devices.

[13] For the reasons given, we are of the opinion that in this case, as in *In re Thompson et al.*, 31 C.C.P.A. (Patents) 1121, 143 F.2d 357, 61 USPQ 498, the Patent Office tribunals have not sufficiently explained the reasons for their rejection of the appellant's claims to permit a proper determination of that issue here.

The decision of the Board of Appeals is accordingly reversed and the case is remanded for further proceedings consistent with this opinion.

JACKSON, Judge, retired, recalled to participate.

43 C.C.P.A. (Patents) 758

Court of Customs and Patent Appeals

In re SHAFFER

Appl. No. 6149 Decided Jan. 20, 1956

## PATENTS

### 1. Patentability—Substitution of equivalents (§ 51.65)

Test of equivalency is whether substituted element operates in substantially same way to produce substantially same result as element replaced.

### 2. Patentability—Anticipation—In general (§ 51.201)

Patentability—Anticipation—Combining references (§ 51.205)

Patentability—Evidence of—In general (§ 51.451)

Although references may be combined to show that claim is unpatentable, they may not be combined indiscriminately; criterion to determine whether combination is proper is whether prior art suggests doing what applicant did; when references are combined to negate patentability, it should also be considered whether one skilled in art with references before him could have made combination of elements claimed without exercise of invention; it is not enough for valid rejection to view prior art in retrospect once applicant's disclosure is known; art